

Claims

- [c1] A hydrocarbon fluid containment article comprising a wall and a coating system on the wall, the coating system comprising an outermost layer of platinum and a ceramic barrier layer between the outermost layer and the wall.
- [c2] The hydrocarbon fluid containment article according to claim 1, wherein the outermost layer has a thickness of about 150 to about 200 nm.
- [c3] The hydrocarbon fluid containment article according to claim 1, wherein the barrier layer has a thickness of about 500 to about 1500 nm.
- [c4] The hydrocarbon fluid containment article according to claim 1, wherein the barrier layer is formed of at least one ceramic material chosen from the group consisting of silica, alumina, tantalum, hafnia, yttria, and chemical combinations of silica with boron and/or phosphorous and/or alumina.
- [c5] The hydrocarbon fluid containment article according to claim 1, wherein the outermost layer contacts a hydrocarbon fluid at a temperature of about 105 ° C to about 345 ° C.
- [c6] An article having a wall contacting a hydrocarbon fluid at a temperature of about 105 ° C to about 345 ° C, the article comprising a coating system on the wall that inhibits the formation and adhesion of carbonaceous deposits on the wall, the coating system comprising an outermost layer of platinum and a ceramic barrier layer between the outermost layer and the wall, the outermost layer having a thickness of about 150 to about 500 nm, the barrier layer having a thickness of about 500 to about 1500 nm, the barrier layer being formed of at least one ceramic material chosen from the group consisting of silica and alumina.
- [c7] The article according to claim 6, wherein the outermost layer has a thickness of about 150 to about 200 nm.
- [c8] The article according to claim 6, wherein the barrier layer has a thickness of about 700 to about 1300 nm.

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- [c9] The article according to claim 6, wherein the barrier layer is formed of either silica or alumina.
- [c10] The article according to claim 6, wherein the article is a gas turbine engine component.
- [c11] The article according to claim 6, wherein the article is a gas turbine engine component chosen from the group consisting of fuel/air heat exchangers, pipes, fuel nozzles and oil sumps.
- [c12] The article according to claim 6, wherein the outermost layer and the barrier layer are deposited by chemical vapor deposition.
- [c13] The article according to claim 6, wherein the outermost layer has a surface roughness of not greater than about one micrometer R_a . The article according to claim 6, wherein the outermost layer has a surface roughness of not greater than about one micrometer R_a .
- [c14] A method for inhibiting the formation and adhesion of carbonaceous deposits on a wall of a hydrocarbon fluid containment article, the method comprising the step of depositing a ceramic barrier layer on the wall, and then depositing an outermost layer of platinum on the ceramic barrier layer.
- [c15] The method according to claim 14, wherein the outermost layer has a thickness of about 150 to about 200 nm.
- [c16] The method according to claim 14, wherein the barrier layer has a thickness of about 500 to about 1500 nm.
- [c17] The method according to claim 14, wherein the barrier layer is formed of at least one ceramic material chosen from the group consisting of silica, alumina, tantala, hafnia, yttria, and chemical combinations of silica with boron and/or phosphorous and/or alumina.
- [c18] The method according to claim 14, further comprising the step of contacting the outermost layer with a hydrocarbon fluid at a temperature of about 105 ° C to about 345 ° C.

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[c19] The method according to claim 14, wherein the outermost layer has a thickness of about 150 to about 200 nm and the barrier layer has a thickness of about 700 to about 1300 nm.

[c20] The method according to claim 14, wherein the article is a gas turbine engine component.